



Mission Math Utah

# Spring Competition

## Elementary Division: Free Response

March 17, 2018

Name: \_\_\_\_\_

School: \_\_\_\_\_

Grade: \_\_\_\_\_

### General Information

- Do not open your test until you are instructed to do so by the proctor.
- Correctly fill out the information above in a legible manner.
- This section contains **10 Free Response Questions**. You will have exactly **20 minutes** to work on them.
- Electronic devices such as graphing calculators, cell phones, or watches with calculators, are not permitted during this test.

### Grading

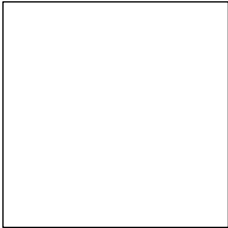
- Each correct answer will be worth 1 points.
- Each incorrect answer will be worth 0 points.
- Each blank answer will be worth 0 points.
- Partial credit will not be awarded.

### Answer Forms

- Answers must be marked clearly on the answer form in the allotted space.
- All answers must be expressed in the appropriate form as specified in the question. All answers should include units if necessary.
- Please write all answers legibly. Your answer will be marked incorrect if the graders are unable to understand your answer.

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These problems are meant to be challenging. Don't worry if you are unable to solve a problem. Try to focus on the ones you think you may be able to solve. Check your work once you are done. You may only turn your test in after 15 minutes have passed.

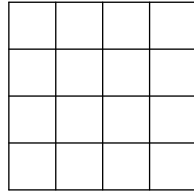
1. A bowling alley has 1 pin in the first row, 2 pins in the second row, 3 pins in the third row, and 4 pins in the fourth row. How many pins are there total? 1. \_\_\_\_\_ pins
  
  2. A leprechaun can cross 20 rainbows in an hour. How many minutes does it take for the leprechaun to cross 1 rainbow? 2. \_\_\_\_\_ minutes
  
  3. There are 5 yellow stones and a number of blue stones in an urn. If  $\frac{1}{3}$  of the stones are yellow, how many are blue? 3. \_\_\_\_\_ stones
  
  4. 3 empty pots at the end of a rainbow collect 10 tons of gold in an hour. At the same rate, how many minutes does it take for 6 pots to collect 15 tons of gold? 4. \_\_\_\_\_ minutes
  
  5. The perimeter of a square is 12 inches. What is the area of the square, in square inches? 5. \_\_\_\_\_ in<sup>2</sup>
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6. Mr. Froggy goes to a meeting with three other frogs. Each frog shakes hands exactly once with each other frog. How many total handshakes take place? 6. \_\_\_\_\_ shakes
  
  7. I have a number. I subtract 1, multiply by 2, divide by 3, and then add 4. I now have 10. What was my original number? 7. \_\_\_\_\_

8. Bartholomew goes to the Ice Cream store. At the store, there are 3 different flavors of ice cream: Vanilla, Chocolate, and Strawberry. There are 2 toppings that he can choose from: Nuts or Caramel. If a combo is made of one flavor and one topping, how many different ice cream combos can he buy?

8. \_\_\_\_\_ combos

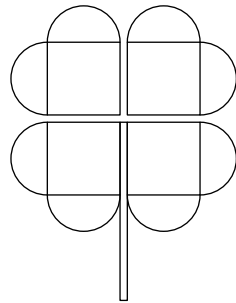
9. How many squares of any size are in the figure shown?

9. \_\_\_\_\_ squares



10. A four-leaf clover consists of a stem, of area 1 square inch, and four leaves. Each leaf is made of a square of side length 3 inches, and two semicircles on the sides of the square. What is the area of the clover, in square inches? Express your answer in terms of  $\pi$ .

10. \_\_\_\_\_ in<sup>2</sup>



11. BONUS: On a scale of 1-10, how much do you love math?

11. \_\_\_\_\_